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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3 New York, August 26, 1918 No. 9

KNOW YOUR ENEMY!

Arrest of Bayer Company Officials and Exposé of Their Methods Should Put Dye Men on Their Guard

TOO much importance cannot be attached to the recent arrest of five officials of the Bayer Company, charged with conspiracy to engineer a generous slice of the future profits of the concern into German hands, while at the same time retaining a strong footing in the chemical industry in this country for the probable purpose of enabling Germany to re-establish her dye and drug interests in the United States after the war; nor to the practically contemporaneous indictment of Frederick C. Atteaux, a well-known Boston importer, likewise charged with conspiracy to defraud the Government by undervaluations of chemicals and dyestuffs shipped into this country.

These cases form two of the most recent examples of a condition which has existed in the past, and which, please note, undoubtedly still exists in a number of instances as yet undetected. And what is more, it is distinctly up to the *American* dye manufacturer, dealer, dyer, mill man, and, in fact, every individual, no matter how remotely connected with the industry, to watch out for this sort of treachery with both eyes during every waking moment, and to expose it promptly, once found, regardless of what inconvenience or even personal sacrifice it may cost him. The opportunities are still many.

There is no doubt but that there are still some to whom the German agent and his activities in this country is a myth and a joke and a comic-paper figment of the imagination. It is really high time that the last of these unconscious and fatuous aids to Hunnish designs was rudely jolted into a realization that it is not the Germans in the trenches whom we have to fear, but the Germans and German sympathizers in this country who, masking their activities behind a bland smile and an array of Liberty Bonds, proceed to undermine our institutions and morale at every favorable opportunity. Apparently no methods are too debased for them to employ, no slime of treachery too foul for them to wallow in. The more honest and straightforward the citizen of this country is, the harder it is for him to understand and guard against just such occurrences as those herein recorded. Is it not better, then, to err on the side of being oversuspicious?

The arrest and exposure of the

Bayer Company officials is greatly to be rejoiced at, as are the initial steps already taken in the Atteaux case. And it is the earnest hope of this publication that, should their guilt be firmly established, they will be dealt with to the full limit of the law. Their offense lies not in being Germans or in sympathy with Germany, but in posing as loyal Americans, drawing all manner of sustenance and comforts from this country, and then secretly playing the part of traitors to the land which they outwardly professed to love. Benedict Arnold barely escaped with his life after trying something not so very different, while Major Andre learned too late the true grimness of assisting others in the consummatio n of this most heinous of all crimes.

We believe it to be the duty of those who have not already awakened to a full realization of what contemptible methods can be employed almost beneath our very noses for months without being detected to acquaint themselves with the more important details of these cases given herewith, and then to read the statement from Alien Property Custodian A. Mitchell Palmer to the public, showing clearly how they can aid in rounding up additional offenders and properties at present unlawfully held.

The charge against Atteaux is specifically that he conspired with Ed Dahl, of Bremen, Germany, to falsify Custom House declarations on chemicals and dyestuffs shipped here. The Government alleges that beginning in December, 1915, Atteaux and Dahl, the latter a member of a wholesale firm in Bremen, shipped goods to Boston and gave a Custom House valuation at half the actual cost. The amount alleged to have been obtained fraudulently was $10,000, Federal officials declare. The case will come up before the next district court.

The Bayer Company, revelations, however, throw into bold relief a gigantic scheme for rendering wholesale aid and comfort to the enemy and to make easy the aims of the German color and drug combine in this country after the war. Once the symbol—as we were told—of purity and reliability, the trade-mark of the concern, the famous "Bayer Cross," has become instead an emblem of treachery and deceit in the minds of those who respect an honest foe.

The men under arrest are Herman C. A. Seebohm, director and secretary of the Bayer Company; Dr. R. J. Pabst, manager of the New York and Southern sales department; A. Reiser, office manager of the Williams & Crowell Color Company, Inc., of Providence, R. I.; Dr. Albert Segin, chief of the pharmaceutical department of the Bayer Company, and Dr. R. Hutz, a former director of the Bayer Company, who was taken into custody in New Hampshire.

According to the New York *Times*, the Bayer Company, which has one of the largest drug and chemical plants in this country, at Rensselaer, N. Y., had been earning money at the rate of $1,500,000 a year before it was taken over by the Alien Property Custodian. Its principal owners were in Germany, the chief of them being Herr Duisberg, general director of the Bayer Company in Germany and the head of the German War Trade Board.

After the company had been taken over by the Government it was found that it was bound by a peculiar contract to transact business with a concern in Providence, R. I., in such a way that the Providence company would profit enormously. Had Custodian Palmer accepted the contract as bona fide and followed its terms, the Bayer Company would have purchased the output of the Providence concern at prices which would have given the Providence company a profit of $600,000 a year.

This profit, until the scheme was detected, was going into the hands of the Germans who had formerly controlled the Bayer Company, and they were using it to buy land on the New Jersey waterfront and to make other arrangements to rehabilitate the German chemical industry in this country under the guise of American ownership. Several American citizens, including a prominent lawyer, whose case is in the hands of the Department of Justice, are said by Mr. Palmer to have co-operated in the scheme to retain a bridgehead for an attack of German commercial interests on the chemical industry in this country after the war.

The corporation at Providence which, according to Government officials, was being used to pump profits from the Bayer Company, while under Government control, is the Williams & Crowell Color Company, Inc. Just before the Bayer concern was taken over, its officials, anticipating Government action, it is alleged, secretly obtained control of the Providence company, a comparatively small concern, which they purchased for $100,000.

The contract, which, it is charged, was intended to pour huge unearned profits into the treasury of the small concern, bound the Bayer Company to purchase its entire output of sulphuric acid dyes, which are being used to dye cloth for uniforms of American soldiers.

After the purchase of the Providence concern, a new company was organized in this city, using the same name except that "Inc." was added. A dummy directorate of American citizens, according to the charges, was formed, and they were curbed from possible participation in the excess profits by a section of the by-laws limiting dividends to 10 per cent on the capital of $100,000. Consequently, the concern, which has been earning $50,000 a month and might soon have been earning more, could not pay out more than $10,000 a year to stockholders.

Suspicion, according to Government officials, was originally directed at the Bayer Company because the directors last January voluntarily asked Mr. Palmer to take over the property because of its alien ownership. The officials of the company seemed to be overzealous in their desire to co-operate with the Government, it was stated, and this gave the impression that they were anxious to have the transfer effected without it being preceded by a searching inspection of the books and affairs of the concern.

It was announced that waterfront property which the Bayer officials and the disguised subsidiary had obtained at Edgewater, N. J., on an option was valuable for war purposes, and would be taken over by the Government.

In order to disguise the ownership of this property still further, they used a legal device that has been encountered by the Alien Property Custodian in virtually every case of a German-owned concern which has

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sought to escape sequestration under the trading with the enemy act. This is what is called a "carry-in-the-hat" corporation, which means articles of incorporation framed to facilitate the transactions of a parent company which cannot safely appear to be connected with some of its transactions.

These are the principal facts of the case as they appeared in the press. To all who are interested Mr. Palmer has sent, through the New York Business Publishers' Association, to readers of the trade press, the following statement regarding such cases in this country:

There are two ways of making war against an enemy. One, by force of arms; the other, by force of economic pressure.

When a nation wages economic war it brings to bear upon the enemy every force it can muster to stop his supply of food, money and munitions, and thereby make him weak and impoverished.

The day the United States entered the war there was in this country millions upon millions of dollars belonging to Germans. It was invested in mines, factories, banks, steamships, farms, plantations, etc. Its total amount might run into billions. We had no way of estimating then. But we did know that it was German gold that was colonizing industries here in America, and that it was good American money that was being shipped back to Berlin in the form of earnings to enrich the German nation, to fill the war chests, to help complete its great plan for a world control of commerce and industry.

When war was declared the army and navy started to mobilize men and guns, the Shipping Board to build the fleet, the War Trade Board to cut all commercial relations with the enemy, and the Alien Property Custodian to gather into the Treasury of the United States every penny of German-owned money that could be found. That is why the office of the Alien Property Custodian was created.

The duties of the Alien Property Custodian are exactly what the name implies; only, in addition to the work of taking over and administering holdings of enemies, he has been given power by Congress to sell outright these properties belonging to the great industrial and corporation classes of Germany planted here in America.

In order to help, it is important to know just *who* is an "enemy" and *what* is "enemy" property.

Enemy property includes any and every kind of property, money, chattels, securities, lands, indebtedness, accounts receivable, etc., which belongs to an enemy. Even if the property is held in the name of another —by a dummy or in trust—if the real beneficial interest belongs to an enemy it is enemy property.

An enemy under the act is:

1. Any person, regardless of citizenship or place of birth, who is within the boundaries of Germany, Austria-Hungary or their allies, or within the territory actually occupied by their military or naval forces. A peaceful and law-abiding German or Austrian citizen residing in the United States is not an enemy; but an American citizen living in enemy territory is an enemy.

2. A corporation, if incorporated within the territory of enemies or their allies, or incorporated in any neutral country and doing business within the territory of enemies or their allies.

3. An official or agent of an enemy government or any sub-division thereof.

4. All natives, citizens or subjects of Germany or Austria-Hungary interned by the War Department.

5. Citizens or subjects of Germany

FRED WETZEL & CO. N.Y.

or Austria-Hungary who are prisoners of war or who have been or shall be interned by any nation associated with the United States in the war.

Three-quarters of a billion dollars' worth of property have been reported to the Alien Property Custodian at Washington to-day, but from our investigation throughout the country we know that there is much more not yet located. Here is where the citizens can render valuable assistance.

You can help the nation by mailing the Bureau of Investigation, Alien Property Custodian, Washington, D. C., reports or information on enemy-owned property in your vicinity. You are shareholders in this great combination trust company, department store and auction sale, now run by the Government, and the larger you swell its holdings the more you will back up the army and navy now battling against the Hun.

THE ALLIED INDUSTRIES CORPORATION AND THE GRAND CENTRAL PALACE

Alfred I. du Pont gave out at the Hotel Belmont on Thursday afternoon of last week certain information with regard to the plans of the Allied Industries Corporation for making use of the Grand Central Palace as a great clearing house for the stimulation of international trade after the war. Mr. du Pont's plans are very comprehensive and, when put into operation, will undoubtedly prove of tremendous value in promoting closer trade relations between the United States and the allied nations. Their scope is so large that we have not the necessary space to go into them in detail in this issue, but will outline them fully in the near future.

The announcement of most immediate interest to the dyestuff trade had to do with the disposition of the Grand Central Palace building which, it appears, will be taken over by the Government for use as a tremendous base hospital for the duration of the war. The governmental occupation, however, will not begin until October 1st, and will in no way interfere with the holding of the Fourth National Exposition of Chemical Industries scheduled for the week of September 23rd.

A man in Spain would like to secure an agency for the sale of powdered colors for dyeing all kinds of silk, wool and cotton textiles. Correspondence should be in Spanish, and further details may be had of the U. S. Bureau of Foreign and Domestic Commerce, or any of its branch offices, by mentioning File No. 27,311

Japanese manufacturers of dyestuffs are considering among themselves the advisibility of asking the Imperial Japanese Government to grant them protection after the war against the rivalry of German and other foreign firms. A leading dye manufacturer of Tokio announces the safe arrival there recently of a large stock of dyes made in the United States.

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A. P. HOWES, Editor and Publisher

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THE BAYER CO. INCIDENT

Our leading article this week is based on the exposé attending the arrest of several officials of the Bayer Company. The carefully camouflaged operations of these gentlemen serve to illustrate very nicely the sort of thing which we may expect from certain Teutonic elements in the dyestuff industry and against which we have printed repeated warnings in these columns. We cannot honestly say that we blame the Germans or hold methods of the sort exposed to be particularly reprehensible—certainly such tactics are mild in the extreme when compared with what we have become accustomed to expect from the Hun in his conduct of submarine warfare. But developments of this kind make it very clear that German commercial interests are no more to be trusted than is the Boche in the trench. Because he cries "Kamerad" is no reason why we may not expect a bayonet in the back.

CONCERNING THE SIXTY-SIXTH CONGRESS

The question of the personnel of the next, or Sixty-sixth, Congress is one which should be of particular interest to both manufacturers and consumers of dyestuffs. There is no doubt that there will come before this Congress numerous questions of more or less moment to the dyestuff industry, and it is extremely desirable that all factors in the industry take it upon themselves, in so far as is possible, to see that persons elected to Congress in their respective districts are of a caliber able intelligently to cope with the large problems which will be submitted to them for consideration and holding views known to be favorable to the best interests of the industry as a whole. At the present time there are numerous Congressional districts which are far from being represented by the men best equipped in point of vision, broad general experience, judgment, ability, courage and loyalty to fill these positions.

Those of our readers who will take it upon themselves to display a little active interest in this matter can undoubtedly accomplish a great deal toward securing the nomination by the two leading political parties of the very best men available in each Congressional district. This is a time when every citizen ought to take an active interest in the politics of the country, and we respectfully suggest that each and every one of our readers ought immediately to get in touch with political leaders, newspaper editors, etc., in his community and voice the vital necessity of securing the nomination and election of men who are thoroughly competent to serve the nation in this time of crisis. Those who are residents of States in which the primaries have already been held should scrutinize carefully the various candidates who have been nominated and determine which of them in their opinion is the man who can most adequately deal with the problems which will come before the next Congress.

This is a question which, although of unusual moment to the dyestuff industry, is one which affects all phases of our national life to little less extent, and which, because of its great importance, should command the interest and energies of all loyal citizens.

Of interest to dyers and dye manufacturers should be the information that a form of chemically treated cotton cloth, to be used, if successful, as a substitute for silk in the army, is now being tested out by the Ordnance Department.

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The Arlington Works, 725 Broadway, New York, N. Y., Ivory Py-ra-lin and Cleanable Collars
Harrison Works, Philadelphia, Pa., Paints, Pigments, Acids and Chemicals.
Du Pont Dye Works, Wilmington, Delaware, Coal Tar Dyestuffs.

DU PONT

DYESTUFFS

By Dr. Louis J. Matos

We give herewith the second installment of Dr. Matos' paper as it appeared in the *Journal of the Franklin Institute*, and which, for the benefit of our readers, we are reproducing in four parts.

Part II

After the discovery of Congo red, in 1884, there was an immediate concentration of chemical endeavors upon the group of substantive dyes—dyes that colored cotton without a mordant—the result being a long line of products that at once gained recognition throughout the world. Some of these dyes are remarkable from the fact that they are capable of dyeing corresponding shades upon both cotton and wool, thereby opening the way for a valuable line of dyes, known as "union dyes," with which both of these fibers may be dyed the same shade in the same bath. This is of great commercial importance, inasmuch as it permits the manufacture of cotton and wool mixed goods that were not theretofore possible, except with considerable trouble.

There are many wool dyes that partially stain cotton, and also many cotton dyes that only slightly stain wool. The dyer, therefore, has at his command the means, by a judicious admixture of these two classes of dyes, of producing a combination of dyes that will enable him to dye union goods with the greatest ease. Most of these combinations dye the cloth in a bath fortified only with a small amount of sulphate of soda.

One of the most important, far-reaching dye discoveries was that of an Englishman—Green—in 1887, who produced a series of dyes known as "ingrain colors," and which at once gained a strong foothold in cotton mills on account of the then remarkable fastness of the shades produced. The most important dye of the group is known as primuline, and occupies a prominent position to this day as a source of red for cotton. It was the first dye to serve as a substitute for alizarine on certain classes of goods. Primuline is dyed upon cotton by the so-called "three-bath" process, which provides for the diazotization of the color on the fiber and its final development with a suitable developer, the most common being beta-naphthol, and produces the red above referred to. This group of colors was first limited to a few shades, possibly six, none being either a blue or a black. This disadvantage was at once apparent, and stimulated research, so that in due time diazotized blacks and blues came upon the market. The blacks appeared to offer particular advantages, especially as competitors of aniline black for hosiery dyeing. Indeed, a number of the best known brands of hosiery on the market are dyed with developed black.

The industry of the sulphur colors commenced by Croissant & Bretoniere in 1873 has been greatly extended, and from which has been given a great number of dyes of the utmost importance. Their field of usefulness is almost confined to the dyeing of cotton. The blacks of this group have, together with the diazotized blacks, been the active competitors of aniline black, while the sulphur blues have, in many instances, replaced indigo for certain lines of cotton manufacture. The sulphur color industry is actually the starting point of the now firmly established "vat color" industry, although but few of the vat colors are made by any of the processes used in producing sulphur colors. The extensive group of vat colors includes a considerable number of dyes that are remarkable for their extreme fastness, and it was the general use of these dyes that gradually educated the people as to what a really fast color is.

The so-called vat dyes are divided into two main groups designated respectively indigo dyestuffs and anthrachinone. The chemistry of both of these two groups is rather complicated,

and it will serve no useful purpose by going into the details of the reactions. For convenience, however, the following classifications may be introduced:

(*a*) INDIGO DYESTUFFS

(1) Indigo group.
(2) Ciba violet group.
(3) Thioindigo group.
(4) Indi rubin group.
(5) Thioindigo scarlet group.
(6) Ciba scarlet group.

(*b*) ANTHRACHINONE DYESTUFFS

(1) Indanthrene group.
(2) Flavanthranone group.
(3) Benzanthranone group.
(4) Anthrachinonimide group.
(5) Acylaminochinone group.
(6) Anthrachinonacridone group.
(7) Vat dyestuffs of unknown composition.

(*c*) VAT COLORS CONTAINING SULPHUR

(1) Anthrachinone bodies.
(2) Carbazol bodies.

This particular group of dyestuffs has excited remarkable interest ever since they were put upon the market; not alone from the chemical standpoint, but also from the fact that the practical results obtained from their use enabled manufacturers of cotton goods to greatly extend their line of woven and printed novelties, carrying at the same time a guarantee as to fastness and durability of shades that startled the industrial world in those lines of cotton manufacture known particularly as wash goods, ladies' and children's summer garments, men's shirtings, madras cloth and similar fabrics, carrying shades of blue, red, pink and combinations that emerged from the laundry quite intact. The study of the vat colors is most interesting. It should be borne in mind that the great majority of the patents granted for these particular colors are still in force, and this fact alone is likely to mitigate against the possibility of the more important of the dyes so protected being manufactured in this country, even after the present war is terminated. There is every reason to believe that the German holders of patents for these valuable dyes will exert every effort to retain the manufacture of these dyes for and in Germany, and that it is hardly likely that licenses will be granted to American dye manufacturing plants permitting of the manufacture of even some of the most wanted of this group of colors. This condition, however, should not prevent a special effort being made on the part of dye chemists, professors of organic chemistry and advanced students of that particular branch of organic chemical work from devoting their undivided time and attention to the investigation of problems aiming to the production of further additions of dyes to this important group of colors. This is a most prolific field and one worthy of very serious thought on the part of chemists.

In this particular connection and relating very closely to this same group of coloring matters may be mentioned work done within very recent years. I take the liberty of making reference to a particular blue that requires as one of its chief raw materials a substance that has heretofore been regarded as an industrial nuisance, but which, due to

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VICTORIA BLUE BASE
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CRYSTAL VIOLET BASE
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DIRECT GREEN GG
DIRECT ROSE
BENZYL CHLORIDE
PICRAMIC ACID
ORTHONITROPHENOL
PARANITROPHENOL
METAPHENYLENEDIAMINE
PARAPHENYLENEDIAMINE
PHOSGENE
SALICYLIC ACID

the painstaking care of the investigating chemists, has been made available for the production of a coloring matter that possesses a shade equal to and properties excelling in fastness those of indigo. I refer to carbazol, which, prior to this time, had been of no commercial or industrial value whatever, which has been found closely associated with anthracene as an impurity, and from which latter it has to be separated by a process fraught with some difficulties. Carbazol has been made available for textile purposes by being converted into the blue dye applied in a manner similar to indigo in the "vat," and which produces indigo shades from the lightest to the darkest with great facility. For its production it is simply a matter of obtaining carbazol, and when this product is secured in sufficient quantities there is no doubt but that the dye industry and that portion of the textile industry most interested will receive a great impetus.

In mentioning carbazol as a prolific source for chemical investigation, I might also include a number of equally well known and troublesome organic impurities found in other coal-tar distillates, which only await the attacks of the painstaking industrial chemists to find ways for their commercial utilization.

(*To be continued*)

With a capital of $60,000, the Masson Dyeing Co. was recently incorporated under the laws of New Jersey. The concern will manufacture dyes, chemicals, etc., in Jersey City, that state.

At an estimated cost of $40,000, the Mianus Manufacturing Co., New York City, will erect a 4-story, 42x145 dyehouse at Cos Cob, Conn. The building will be built of reinforced concrete.

CUTCH ON COTTON AND OTHER VEGETABLE FIBERS

By P. Montavon

The following study of recent research in connection with the applications of cutch appeared originally in the "Revue Generale des Matieres Colorantes," and was translated by a writer for the *Textile Colorist*, from which it is herewith reprinted:

Cutch came to its own again when there was a shortage of artificial dyestuffs. This led J. J. Hummel and R. B. Brown to make researches on the usual ways of dyeing with this vegetable coloring matter, and they paid special attention to the effect of the addition of sulphate of copper to the cutch bath. They experimented with twenty-nine varieties of Indian cutch submitted to them by the Imperial Institute, but these were repetitions of researches on the two principal compounds, catechin and catechutannic acid, of which all varieties of cutch are composed in more or less quantities.

Limited in this way, these researches were hardly conclusive in face of the fact that they bore only on a part of the problem, which may be stated as follows: Given that copper is necessary for the complete development of the coloring matter of cutch by oxidation, to find a logical and efficacious method of making it act. This problem, which Hummel and Brown have merely touched upon, I claim to have resolved more than thirty-five years ago, as I will endeavor to demonstrate.

Considerable quantities of brown cutch are consumed at present. Yellow cubical cutch (gambier) is hardly used, except in calico printing, and can be left out of consideration. The sorts of cutch with a brilliant fracture are most in request—that is to say, the most soluble kinds. Cutch is used in dyeing Havana, nut-brown, chestnut, and dark beige shades, and as a bottom for olives, fawns and other aniline dyeings. It is also used as a bottom for a fast logwood black.

Two methods principally have

been used in dyeing with cutch. The first, and the most employed, consists of steeping the cotton in a bath of cutch and sulphate of copper and after-chroming. In the second method, the cotton is dyed in the cutch bath, with or without the addition of sulphate of copper; the color is then fixed with a salt of iron, and after rinsing it is oxidized in a boiling bath of chrome.

These processes introduced at Thaon by old foremen from Rouen and Mulhouse were all very well for common goods, but they gave a cloudy dyeing, lacking transparence on fine tissues, such as satinette and mercerized fabrics. This cloudiness arose from the more or less turbid dyebaths, and disappeared when boiling limpid bath of cutch, free from sulphate of copper, was used; but at the same time the shades obtained were not so full. As, therefore, the copper seemed to be indispensable, I endeavored to add it to the chrome bath, and in this way I obtained results even better than expected. The method of application was as follows:

The tissue was padded on a machine with the lower roller covered with fairly hard india rubber and the upper roller of metal. A short bath constantly renewed was used and heated by a serpentine. After two passages the cloth was chromed on the jigger with 3 per cent of bichrome and 2 per cent of sulphate of copper for a medium chestnut shade, then thoroughly rinsed. The cutch bath was made with 10 per cent of coloring matter, which, after complete solution, was passed through a sieve in order to free it from impurities. When it is noted that any solution of cutch, even a weak one, will deposit on cooling, the necessity of thoroughly stirring and heating to a state of perfect lipidity before pouring into the padding trough is emphasized. The cutch solution above can be reduced according to the shade desired.

This method has in addition the advantage of allowing a mixture of cutch and the majority of the dyewoods to be made, in order to obtain any tint of brown directly and without the necessity of topping. For instance, Cuba wood or other yellow extract can be added to the bath to get the yellowest tints of brown. Brazil wood and other red extracts give a more violet brown. Sumac, myrobalan, chestnut and other tannins modify the too red tint of the cutch; logwood added to any combination deepens the shade and tends to avoid the necessity of a second treatment.

I have also tried with success a mixture of cutch and Cachou de Laval in the same bath. This idea allowed me to produce the less red and deeper tints required by the army.

By analogy with wood extracts I tried the effect of an alkaline bath to increase the solubility of the cutch, but the dyeings obtained were lighter and thinner. I also found that treatment with salts of iron after chroming increased the labor and expense without any useful result.

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A NEW CLASS OF VAT DYESTUFFS

Dr. Richard Herz, of Frankfort a.M., describes (Amer. Pats. 1,243,170 and 1,243,171) a new class of vat dyestuffs available for imparting a wide variety of shades to vegetable and animal fibers. This series, containing nitrogen, sulphur and chlorine in their molecule, results if an excess of disulphur-dichloride (S_2Cl_2) is allowed to react on such aromatic aminocompounds and derivatives thereof, which contain in their molecule at least one primary amino group and one free ortho-position thereto. The manufacture is essentially as follows:

The products of reaction of an excess of disulphur-dichloride on aromatic aminocompounds or derivatives thereof are first treated with water or dilute alkalis, and are then condensed in an alkaline solution with monochloracetic acid, whereby products of condensation are formed possessing the character of aromatic o-amino-carboxylic acids. These latter substances are then diazotized, and in the diazo compounds thus produced the diazo group is substituted by cyanogen, thus nitrile compounds being obtained. These nitriles are suitably treated with alkalis, alkaline sulphides, alkaline disulphides, or acids, whereby they are saponified and simultaneously transformed into ring compounds. These, by a further suitable treatment, preferably by heating with dilute acids and subsequent oxidation, produce the valuable vat colors. They contain sulphur in their molecule and yield on animal and vegetable fibers shades varying from orange, red to purple, violet, brown and black, which are distinguished by their brightness and their unusual fastness to chlorine, severe washing, scouring, crossdyeing and bowking.

Aniline, o-toluidine, m-toluidine and p-xylidine are cited as desirable starting materials. Aniline yields crimson shades; the others yield pink shades. The general process is evident from the following example:

One hundred kilos dry, well-ground o-toluidine-hydrochloride are heated in a suitable vessel, fitted with a stirrer, with five to ten times the quantity of disulphur-dichloride, to 50 to 70 deg. C., until a test can no longer be diazotized and coupled. It is then diluted with an anhydrous, inert agent, such as naphtha, benzine, ligroin, etc., the separating body is removed by suction, washed with one of the hydrocarbons mentioned, freed from any excess of disulphur-dichloride that may adhere to it, and dried, preferably in a vacuum at as low a temperature as possible. One hundred and twenty kilos of the product thus obtained are stirred to a paste with about four times the quantity of alcohol and, while gradually stirring, are introduced into 1,000 liters alcohol of 50 per cent and 250 kilos caustic soda lye 40 deg. Be. It is an advantage to add to this mixture about 50 kilos sodium hydrosulphite.

This mass is first cooled so that the temperature of the reaction may

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not exceed 30 deg. C. After some time the whole is gradually heated to 70 deg. C. and the stirring is continued at this temperature until a test no longer becomes turbid when diluted with water. A neutral or slightly alkaline solution of 55 kilos monochloracetic acid in about 250 kilos-liters water and 67.5 kilos of caustic soda lye, 40 deg. Be., are now added, the whole being heated for from two to three hours at 70 to 80 deg. C. Condensation being completed, the alcohol is distilled off, the whole is filtered and the condensation product in solution may be directly used for the production of the vat dyestuff.

The solution of the condensation product, obtained as described above, is charged with about 40 kilos sodium nitrate; the mixture is then gradually introduced while stirring well in dilute cold hydrochloric or sulphuric acid (for instance, 200 kilos hydrochloric acid concentrated, 500 liters water and 500 kilos ice). The resulting diazocompound remains in solution with a yellowish color, is neutralized and gradually added under constant stirring to a solution of cupro-cyanide (obtained from 125 kilos copper sulphate and 113 kilos potassium cyanide). The reaction being complete, the neutral solution is filtered off and the nitrile separated by acidifying from the filtrate as a yellowish white crystalline precipitate.

The saponification of the nitrile so formed and the formation of the ring body containing sulphur may be carried out by several methods. The following is an advantageous process:

Twenty kilos of the nitrile are heated with 100 kilos sodium sulphide crystals and 20 liters water, about one-half to one hour, to 70 deg. to 100 deg. C. The sodium salt of the new ring compound separates when heated in shining leaflets; the whole is then allowed to cool, diluted with a solution of common salt, and the separated precipitate filtered off.

The sodium salt, obtained and described above, is dissolved in water charged with dilute sulphuric acid, and the acid solution is heated in the reflux condenser until the separation of the carbonic acid and the ammonia is complete. The whole is then allowed to cool and the precipitate is filtered off. For transformation into the red vat color, the precipitate is dissolved in dilute caustic soda lye, and a current of air is passed through this solution until all the dyestuff separates in crimson flakes.

The dyestuff is filtered off, washed out well and preferably used straightaway in paste form. When dried it is a red powder, which dissolves in hot nitrobenzene with a bluish red color and yellow fluorescence, in warm concentrated sulphuric acid with a dark green color, in the alkaline hydrosulphite vat it dissolves with a yellow color and dyes cotton and wool pink shades, which surpass by their unusual purity of shade and their excellent properties of fastness all pink vat dyestuffs on the market. In exactly the same manner from the products of reaction of disulphur dichloride on m-toluidin and p-xylidin vat dyestuffs are obtained which dye in the alkaline hydrosulphite vat cotton and wool bluish pink shades with similar properties of fastness and purity.

FRED WETZEL & CO. N.Y.

In hoc signo vincimus

DYE EXCHANGE CORPORATION

CLEARING HOUSE FOR COLORS

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NOTES OF THE TRADE

Southern mills will be interested to learn that the American Aniline Products, Inc., of New York, have taken new and larger quarters for their Southern office and laboratory at 214 Main Street, Danville, Va., and that they have opened at the same address a large warehouse where they are carrying an ample stock of their colors. This will enable them to render more efficient service by supplying the Southern trade direct from Danville.

An agency is desired by a man in Italy for the sale of all kinds of dyeing materials for skins and fabrics of all kinds. Correspondence should be in French or Italian. For references and further details, readers interested should communicate with the U. S. Bureau of Foreign and Domestic Commerce, or any of its district or cooperative offices, mentioning File No. 27,310.

The spring color card has just been issued by the Textile Color Card Association and carries thirty-four new shades for the approval of those interested, with blue in the ascendancy. Although the card contains a total of forty-four shades in the aggregate, ten of these have been carried over from other seasons.

All phases of the chemistry of dyestuffs will be discussed at the "Dyestuff Symposium," to be held Tuesday, Sept. 10, by the American Chemical Society in Cleveland. The hour set is 2 o'clock, when a number of papers will be presented by experts, to be followed by a general discussion. It is expected that the meeting will be continued over into Wednesday morning, and the hope is that it will be followed by regular meetings hereafter of those interested in dyestuffs who attend conventions of the A. C. S. The society's announcement concludes: "As this (the chemical) phase of the dyestuff industry is so essential to its ultimate development, we are asking hearty co-operation of all interested in this industry."

With the purpose of acting as a distributing center for raw materials, and to safeguard the interests of its members, both now and during the transition period following the war, an association of German dye manufacturers, whose products include finely ground dyes, has been organized in Berlin. The membership includes practically all firms affected.

With a capital of $50,000, the Special Materials Company has been incorporated under the laws of New York to manufacture drugs, chemicals and dyestuffs. The firm will have its headquarters in Brooklyn, and the incorporators are L. H. Wallace, G. Lau and C. A. Spencer, 60 South Elliott Place, that city.

Figures made public recently show that the United States now holds within its borders the largest dyestuff industry anywhere in the world outside of Germany. The total capitalization of the industry is put at more than $200,000,000 and there are now some 125 factories engaged in the manufacture of dyes where but six flourished prior to 1914.

Inability to secure adequate supplies of raw materials has led two English manufacturers of logwood and fustic extracts in Liverpool to abandon production of these products, according to consular advices received here. One of these firms has gone on record as willing to purchase from any reliable firm in the United States which can offer the best value.

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The application of dyestuffs to textiles is as important as their production. The technique of this branch of the color industry has for years commanded the best talent among those dyestuff distributors who have catered to the highest class of trade.

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Such problems are welcomed by the technical department of this company, which is manned by chemists who have been picked because of their knowledge, practical experience and demonstrated ability. We have long maintained well-equipped laboratories at our different offices for this purpose, and invite inquiries and extend, without any obligation on the part of our customers, our services to all who stand in need of them.

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